Treatment of canine congenital extrahepatic portosystemic shunts – a systematic review and meta-analysis

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The assessment of the most optimal treatment option for congenital extrahepatic portosystemic shunts (cEHPSS) is a topic of interest in veterinary medicine. A combined systematic review and meta-analysis was designed to evaluate the existing evidence with regards to the effectiveness of different cEHPSS management modalities. Electronic databases of PubMed, CAB Direct and Google Scholar were searched without date or language restrictions. Conference proceedings from 1990 to 2017 of major congresses were also searched. Peer-reviewed full-length studies describing the outcome for at least one treatment modality in dogs with cEHPSS were included. All studies were assessed for quality of evidence (study design, study group sizes, subject enrolment quality and overall risk of bias) and outcome measures reported (percentage of perioperative outcome, clinical and surgical/interventional outcome, all concomitantly reported with 95 % confidence interval).

Sixty-nine studies, including seven conference abstracts, reporting perioperative and/or clinical and/or surgical/interventional outcomes of dogs managed with one surgical/interventional technique and/or medical management for cEHPSS were identified. Only 19 studies were designed as prospective studies, including one non-blinded randomized controlled clinical trial, one non-blinded non-randomized controlled clinical trial and 17 uncontrolled clinical trials. The majority of the studies showed overall high risk of bias and evaluated low to very low numbers of cases per treatment group (67%) but with clearly characterized subject enrolment criteria (97%).

Direct comparison of ameroid constrictor versus thin film band revealed a statistically significant difference between the two techniques with regards to the surgical outcome, with ameroid constrictor being superior. Direct comparisons also suggested that ameroid constrictor placement might have a better perioperative, clinical, and surgical/interventional outcome than ligation. However, none of these comparisons were statistically significant. Direct comparison of other techniques was not possible due to lack of data. Indirect comparison suggested that ameroid constrictor placement and complete ligation were the techniques with better perioperative, clinical, and surgical/interventional outcome, followed by thin film band, coil embolization, and partial ligation. The outcome assessment for Amplatzer vascular plug and medical management was based on small numbers of cases to allow accurate interpretations.

In conclusion, this combined systematic review and meta-analysis provides objective evaluation of the treatment options of the cEHPSS. Ameroid constrictor was shown to be the technique with the higher likelihood of providing a good outcome. Complete ligation, thin film band, coil embolization and partial ligation were shown to be effective techniques in the treatment of cEHPSS, although less than ameroid constrictor. Blinded randomized studies with low overall risk of bias and good number of cases comparing different treatment modalities that routinely include postoperative imaging to assess cEHPSS closure and/or acquired portosystemic shunts development are essential.